IN THE UNITED STATES DISTRICT COURT

FOR THE NORTHERN DISTRICT OF CALIFORNIA

GENERAL ATOMICS, DIAZYME LABORATORIES DIVISION,

Plaintiff,

v.

AXIS-SHIELD ASA,

Defendant.
_____/

No. C 05-4074 SI

ORDER GRANTING PLAINTIFF'S MOTION FOR SUMMARY JUDGMENT IN PART AND DENYING IT IN PART

On February 23, 2007, the Court heard argument on plaintiff's motion for summary judgment of noninfringement. Having considered the arguments of counsel and the papers submitted, and for good cause shown, the Court hereby GRANTS plaintiff's motion concerning its "enzymatic assay" and DENIES plaintiff's motion concerning its "microtiter assay."

BACKGROUND

Plaintiff General Atomics, Diazyme Laboratories Division and Carolina Liquid Chemistries Corporation (collectively, "General Atomics") is a California corporation that sells assays that detect the level of homocysteine[1] in human samples. On October 11, 2005, General Atomics filed this action against Axis-Shield ASA ("Axis-Shield"), a Norwegian corporation, seeking declaratory judgment that its assays did not infringe U.S. Patents owned by Axis-Shield. Although the complaint originally sought a declaration of noninfringement as to four Axis-Shield patents, only two remain in this suit: U.S.

[1] Homocysteine is a naturally occurring amino acid found in the human body. Elevated levels of homocysteine can signify various disorders, including cardiovascular disease. *See* U.S. Patent No. 5,631,127, 1:8-49.

Patent No. 5,631,127 ("the '127 patent") and U.S. Patent No. 5,958,717 ("the '717 patent").

On July 19, 2006, the Court granted plaintiff General Atomics's motion for summary judgment of noninfringement. After granting summary judgment, however, the Court allowed defendant Axis-Shield to amend its preliminary infringement contentions.

Axis-Shield contends that General Atomics's homocysteine assays infringe both the '127 and the '717 patents. These patents describe methods for detecting levels of homocysteine in samples of blood, plasma, or urine, as well as kits for performing those methods. The patents both stem from the same priority application and have substantially identical specifications.[2] All asserted claims depend on claim 1 of the '127 patent or claim 1 of the '717 patent.[3]

Claim 1 of the '127 patent reads as follows:

> In a method for assaying homocysteine in a sample, said method comprising the steps of (i) contacting said sample with a homocysteine converting enzyme and at least one substrate for said enzyme other than homocysteine, and (ii) assessing an analyte which is a substrate for said enzyme, wherein the improvement comprises in step (i) contacting said sample with said substrate other than homocysteine and in step (ii) without chromatographic separation assessing a non-labelled analyte selected from the group consisting of a homocysteine co-substrate and the homocysteine conversion products of the enzymatic conversion of homocysteine by said enzyme.

'127 patent, 22:44-55. Claim 1 of the '717 patent is similar. It provides:

> In a method for assaying homocysteine in a sample, said method comprising the steps of (i) contacting said sample with a homocysteine-converting enzyme and (ii) assessing an analyte, wherein the improvement comprises in step (ii) without chromatographic separation assessing a non-labeled analyte selected from the group consisting of the homocysteine conversion products of the enzymatic conversion of homocysteine by said enzyme.

'717 patent, 22:60-67.

The Court held a claim construction hearing on September 13, 2006 and entered a claim construction order on September 27, 2006. General Atomics subsequently filed the instant motion for

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[2] Both claims at issue are written in "Jepson" format, in which the independent claims contain three parts: "(1) a preamble comprising a general description of all the elements or steps of the claimed combination which are conventional or known, (2) a phrase such as 'wherein the improvement comprises,' and (3) those elements, steps and/or relationships which constitute that portion of the claimed combination which the applicant considers as the new or improved portion." 37 C.F.R. § 1.75(e); *see also Rowe v. Dror*, 112 F.3d 473, 479 (Fed. Cir. 1997).

[3] Axis-Shield asserts infringement of claims 2, 9, 10, and 23 of the '127 patent and claims 2, 3, 4, 11, and 12 of the '717 patent.

summary judgment of noninfringement ("2nd SJ Mot."). Both parties also filed motions to strike evidence presented by the other side.

LEGAL STANDARDS

I. Summary Judgment

Summary judgment is proper "if the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a judgment as a matter of law." Fed. R. Civ. P. 56(c); *see also Oddzon Prods., Inc. v. Just Toys, Inc.*, 122 F.3d 1396, 1401 (Fed. Cir. 1997) (citing Fed. R. Civ. P. 56(c)). The moving party bears the initial burden of demonstrating the absence of a genuine issue of material fact. *See Celotex Corp. v. Catrett*, 477 U.S. 317, 323, 106 S. Ct. 2548 (1986). The moving party, however, has no burden to negate or disprove matters on which the non-moving party will have the burden of proof at trial. The moving party need only point out to the Court that there is an absence of evidence to support the non-moving party's case. *See id.* at 325.

The burden then shifts to the non-moving party to "designate 'specific facts showing that there is a genuine issue for trial.'" *Id.* at 324 (quoting Fed. R. Civ. P. 56(e)). To carry this burden, the non-moving party must "do more than simply show that there is some metaphysical doubt as to the material facts." *Matsushita Electric Industrial Co., Ltd. v. Zenith Radio Corp.*, 475 U.S. 574, 586, 106 S. Ct. 1348 (1986). "The mere existence of a scintilla of evidence . . . will be insufficient; there must be evidence on which the jury could reasonably find for the [non-moving party]." *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 252, 106 S. Ct. 2505 (1986).

In a motion for summary judgment, the evidence is viewed in the light most favorable to the non-moving party, and all justifiable inferences are to be drawn in its favor. *Id.* at 255. "Credibility determinations, the weighing of the evidence, and the drawing of legitimate inferences from the facts are jury functions, not those of a judge [when she] is ruling on a motion for summary judgment." *Id.*

II. Summary Judgment of Noninfringement

"Summary judgment is appropriate in a patent case, as in other cases, when there is no genuine

issue as to any material fact and the moving party is entitled to judgment as a matter of law." *Nike Inc. v. Wolverine World Wide, Inc.*, 43 F.3d 644, 646 (Fed. Cir. 1994) (citations omitted). Summary judgment can be used to determine both infringement and noninfringement. *Avia Group Intern., Inc. v. L.A. Gear California, Inc.*, 853 F.2d 1557, 1560 (Fed. Cir. 1988). The moving party bears the burden of proving infringement or noninfringement by a preponderance of the evidence. *Mannesmann Demag Corp. v. Engineered Metal Products, Inc.*, 793 F.2d 1279, 1282 (Fed Cir. 1986). To establish infringement, every limitation in a claim as construed by the Court must be in the accused product, either exactly or by substantial equivalent. *Carroll Touch, Inc., v. Electro Mechanical Systems*, 15 F.3d 1573, 1576 (Fed. Cir. 1993). A claim is literally infringed if the accused product is exactly the same as each element of the asserted claim. *Hi-Life Products, Inc. v. American National Water-Mattress Corp.*, 842 F.2d 323, 325 (Fed. Cir. 1986). Even if a product does not literally infringe it may infringe under the doctrine of equivalents. *See Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*, 520 U.S. 17, 21 (1997). "A claim element is equivalently present in an accused device if only 'insubstantial differences' distinguish the missing claim element from the corresponding aspects of the accused device." *Sage Prods., Inc. v. Devon Indus. Inc.*, 126 F.3d 1420, 1423 (Fed. Cir. 1997).

Although the determination of patent infringement is a fact-intensive process, "comparison of a properly interpreted claim with a stipulated or uncontested description of an accused device or process would reflect such an absence of material fact issue as to warrant summary judgment of infringement or noninfringement." *D.M.I. Inc. v. Deere & Co.*, 755 F.2d 1570, 1573 (Fed. Cir. 1985).

DISCUSSION

General Atomics makes two homocysteine assays: an "enzymatic assay" and a "microtiter assay."[4] While the earlier summary judgment motion concerned only General Atomics's enzymatic assay, this summary judgment motion concerns both its enzymatic assay and the microtiter assay. The majority of the arguments on both sides concern the enzymatic assay.

[4] General Atomics no longer sells the microtiter assay.

I. The Enzymatic Assay

In the first motion for summary judgment, the parties generally agreed as to how the enzymatic assay worked. The parties now actively dispute the true functioning of the enzymatic assay. Axis-Shield states that its original infringement theories were premised upon General Atomics's false characterization of its assays. The enzymatic assay, functioning as they now know it does, Axis-Shield argues, infringes its patents. The Court agrees with General Atomics, however, that even under Axis-Shield's new theory of infringement, summary judgment of noninfringement in favor of General Atomics is warranted because one of the claim limitations cannot be reached.

A. The Functioning of the Enzymatic Assay

At the time of the original summary judgment motion the parties appeared to agree that General Atomics's enzymatic assay was comprised of the following steps:

(1) The process begins with a sample of homocysteine and a co-substrate,[5] which in this case is S-adenosyl-L-methionine ("SAM").

(2) Homocysteine-methionine methyl transferase ("HMTase") is added. HMTase is an enzyme which acts on both the homocysteine and SAM. It removes a methyl group from the SAM and attaches it to the homocysteine.

(3) Through this enzymatic reaction, SAM is converted into S-adenosyl-L-homocysteine ("SAH"), which is a SAM molecule that has lost a methyl group. Homocysteine converts into methionine, which is a homocysteine molecule that has an additional methyl group.

(4) The amount of SAH is then measured using a chemical analyzer, SAH-hydrolase. Because the amount of SAH will be proportionate to the amount of homocysteine in the sample, measuring SAH allows the amount of homocysteine to be determined.

Under Axis-Shield's original infringement theory, Axis-Shield argued that HMTase was a "homocysteine converting enzyme" and that SAH was a "non-labelled analyte selected from the group

[5] The substance on which an enzyme acts is called a substrate. As homocysteine is also technically a substrate, since the enzyme added in the second step acts on both homocysteine and SAM, SAM is a co-substrate.

consisting of a homocysteine co-substrate and the homocysteine conversion products of the enzymic conversion of homocysteine by said enzyme," as required by the patent claims at issue. On summary judgment, the Court held that SAH could not be the "non-labelled analyte" because SAH was neither a "homocysteine co-substrate" nor a "homocysteine conversion product[] of the enzymic conversion of homocysteine by said enzyme." Order Granting Summary Judgment of Noninfringement ("1st SJ Order") at 8-14 (Docket No. 83).

Axis-Shield now disputes this earlier sequence. Axis-Shield contends that it has established experimentally that the enzyme SAH-hydrolase is part of the same reagent, R2, that contains HMTase. Oppo. at 3-4. If Axis-Shield's contention is true, it fundamentally changes the process described above. Under Axis-Shield's revised theory of infringement, both HMTase and SAH-hydrolase are added to the sample simultaneously. The SAH-hydrolase acts on the sample homocysteine being assayed, and therefore qualifies as the "homocysteine converting enzyme," instead of HMTase.

Furthermore, according to Axis-Shield, the SAH-hydrolase catalyzes both the reverse[6] and forward reactions simultaneously, converting homocysteine and adenosine into SAH, and also converting SAH into homocysteine and adenosine. SAH is therefore a "homocysteine conversion product," and adenosine is a "homocysteine co-substrate," for purposes of the claims at issue. Oppo. at 18.

More specifically, under Axis-Shield's new theory, after R1 and R2 are mixed, sample homocysteine and SAM begin to react in the presence of HMTase contained in R2, generating SAH. Oppo. at 5. As the SAH appears, the SAH-hydrolase in R2 begins to catalyze the hydrolytic (reverse) reaction, breaking SAH into adenosine and non-sample homocysteine. Oppo. at 5. Thus adenosine starts to appear *before* all the sample homocysteine is consumed by the HMTase reaction. Oppo. at 5.

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[6] Certain enzymic reactions are "reversible," meaning that they can convert substrates to products and can also convert those products back to the original substrates. One of the disclosed reactions in the patents at issue has this characteristic. *See* '127 patent, 3:39-47. The SAH-hydrolase enzyme converts homocysteine and adenosine into SAH but also converts SAH into homocysteine and adenosine. *Id.* In this Court's claim construction order, the term "homocysteine converting enzyme" was construed to mean "an enzyme that acts on the sample homocysteine being assayed" in part because this construction was consistent with a continuous forward-reverse "inhibition" embodiment. Claim Construction Order at 6-7. In this embodiment, the Court found that "SAH acts as both a substrate and a homocysteine conversion product." Claim Construction Order at 6.

Therefore the SAH-hydrolase, which cannot distinguish between sample and non-sample homocysteine, begins to catalyze the synthetic (forward) reaction, generating SAH from homocysteine and adenosine. Oppo. at 5. SAH-hydrolase and HMTase essentially "compete" for the available homocysteine, not distinguishing between sample homocysteine and non-sample homocysteine, and both SAH-hydrolase and HMTase serve as enzymes for the production of SAH from homocysteine. Oppo. at 6:16-18.

B. All Claim Limitations Are Not Reached

Even assuming that SAH-hydrolase is the "homocysteine converting enzyme," adenosine is the "homocysteine co-substrate," and SAH is a "homocysteine conversion product[]," General Atomics' enzymatic assay does not infringe because one of the required claim limitations cannot be met.

All asserted claims must include the step of "assessing a non-labelled analyte . . . ." The parties agreed earlier that the term "assessing an analyte" means

> quantitative or qualitative determination in the sense of obtaining an absolute value for the amount or concentration of the analyte present in the sample or obtaining an index, ratio[], percentage, visual or other value indicative of the level of analyte in the sample. The chemical species actually detected need not be the analyte itself but may for example be a derivative thereof or some further substance.

Claim Construction Order at 4. Under the independent claim of the '127 patent, the non-labelled analyte assessed must be "selected from the group consisting of a homocysteine co-substrate and the homocysteine conversion products of the enzymic conversion of homocysteine by said enzyme." '127 patent, 22:52-55. Under the independent claim of the '717 patent, the "non-labelled analyte" assessed must be "selected from the group consisting of the homocysteine conversion products of the enzymic conversion of homocysteine by said enzyme." '717 patent, 22:65-67. Therefore, the "non-labelled analyte" assessed *must* be either a "homocysteine conversion product" produced by the "enzymic conversion of homocysteine by said enzyme" or a "homocysteine co-substrate." Axis-Shield cannot prove that the enzymatic assay meets this requirement.

Under its new theory, Axis-Shield argues that SAH is the analyte being assessed, and that SAH is a "homocysteine conversion product[] of the enzymatic conversion of homocysteine by said enzyme." "Said enzyme" is SAH-hydrolase, not HMTase. Consequently, in order for the assay to meet this claim

limitation, it must assess only SAH produced by SAH-hydrolase. The Court therefore agrees with General Atomics that Axis-Shield's theory fails, because the SAH that is assessed is produced from homocysteine by both SAH-hydrolase *and* HTMase.[7] The SAH produced by HMTase and the SAH produced by SAH-hydrolase are chemically identical.[8] Because the SAH is chemically identical regardless of origin, it would be impossible to assess solely the SAH originating from the SAH-hydrolase reaction, which is required by the claim limitation. Again, only SAH produced by SAH-hydrolase is a "homocysteine conversion product[] of the enzymic conversion of homocysteine by *said enzyme*." Since there is no issue of material fact as to this claim limitation, summary judgment is appropriate.

Axis-Shield argues that because *some* of the SAH is a "homocysteine conversion product" of SAH-hydrolase, the Court should consider *all* of the SAH to be the same. Surreply at 13. According to Axis-Shield, the SAH being assessed need only be part of "matter class 'homocysteine conversion product.'" Surreply at 13:12-13. Axis-Shields' argument defies logic, and defies the plain language of the claims, as construed by the parties and the Court. The patents describe assessing an "analyte selected from the group consisting of . . . the homocysteine conversion products of the enzymatic conversion of homocysteine by said enzyme"; they do not describe, as Axis-Shield suggests, assessing an analyte selected from the group consisting of matter, *some of which may be* "the homocysteine conversion product[] of the enzymatic conversion of homocysteine by said enzyme."

Axis-Shield fails to raise a triable issue as to whether General Atomics' enzymatic assay meets the "assessing" claim limitation of the patents at issue. Summary judgment of noninfringement is

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[7]Axis-Shield's own description of how the assay functions under the SAH-hydrolase theory affirms this point. In describing its SAH-hydrolase theory, Axis-Shield states that "sample homocysteine and SAM begin to react in the presence of HTMase (in R2) *to generate SAH*." Oppo. at 5 (emphasis added). Then, as "SAH begins to appear, SAH-hydrolase (in R2) begins to catalyze the hydrolytic (reverse) reaction, generating adenosine and non-sample homocysteine." Oppo. at 5. Adenosine then appears before all of the sample homocysteine is consumed by the HMTase reaction. Oppo. at 5. SAH-hydrolase "does not distinguish between sample and non-sample homocysteine and begins to catalyze the synthetic (forward or 'homocysteine converting') reaction between adenosine and whichever homocsyteine molecules it happens to encounter, *generating SAH*." Oppo. at 5 (emphases added). In other words, by Axis-Shield's own description, under the SAH-hydrolase theory of infringement SAH is produced by two different mechanisms: the HMTase reaction and the SAH-hydrolase reaction.

[8] Axis-Shield itself states that all SAH molecules have identical composition. Surreply at 13.

therefore appropriate with respect to the enzymatic assay.

II. The Microtiter Assay

The microtiter assay is an older product sold by General Atomics that was not part of the original summary judgment motion. *See* 1st SJ Mot. at 5 n.2 (Docket No. 43). According to General Atomics, the microtiter assay, which was distributed by Carolina Liquid Chemistries, had less than $200,000 in sales. *Id.* Carolina Liquid Chemistries is not accused of infringement based on the microtiter assay. 2nd SJ Mot. at 2.

The microtiter assay uses a microtiter plate to measure homocysteine levels. Each microtiter assay kit includes a bottle of what General Atomics calls chromatographic separation liquid and chromatographic ion exchange beads (DEAE-Sephadex). Yuan Decl. ¶ 9. In the method, the sample is combined first with SAH-hydrolase and then with adenosine deamise. Yuan Decl. ¶ 10. The user then adds the DEAE-Sephadex. *Id.* The entire mixture is "vortexed together" and then settled. *Id.*; *see also* Oppo. at 20-21. This step in the process is the subject of the infringement allegations.

General Atomics argues that summary judgment is appropriate because the microtiter assay does not meet the claim limitation "without chromatographic separation assessing . . . ." 2nd SJ Mot. at 14. The Court construed "chromatographic separation" to mean "a method for separation of the components of a sample, in which the components are distributed between two phases, one of which is stationary while the other moves." Claim Construction Order at 8.

General Atomics asserts that the step of the microtiter assay involving DEAE-Sephadex is a "chromatographic separation" as the term has been construed by the Court, and since the claim limitation requires no chromatographic separation, summary judgment is appropriate. 2nd SJ Mot. at 14. In response, Axis-Shield presents evidence that the step involving the DEAE Sephadex beads is not chromatographic separation because there is no "stationary" phase during the vortexing, as required by the claim term. Oppo. at 21-22. This evidence is sufficient to raise a triable issue of fact, and summary judgment on the microtiter assay is therefore DENIED.

CONCLUSION

For the foregoing reasons and for good cause shown, the Court hereby GRANTS General Atomics's Motion for Summary Judgment concerning the enzymatic assay and DENIES General Atomics's Motion for Summary Judgment concerning the microtiter assay.[9] (Docket No. 120)

In accordance with the Amended Stipulation and Order for Partial Stay of Discovery, filed November 16, 2006, **the parties are directed to submit a revised proposed case calendar no later than April 23, 2007.**

IT IS SO ORDERED.

Dated: April 11, 2007

SUSAN ILLSTON
United States District Judge

[9] Both parties filed evidentiary objections and motions to strike evidence concerning the enzymatic assay. The disputed evidence is not relevant to the Court's findings on summary judgment, and the Court therefore DENIES the motions to strike and OVERRULES the objections as moot. (Docket Nos. 157, 166)

The Court also received, on March 1, 2007, a motion by Axis-Shield requesting relief from the partial stay of discovery. The request seeks to allow Axis-Shield access to additional samples of the enzymatic assay in order to run further experiments, to prove the composition of R2. In light of this order, further experimentation is unnecessary. The Court therefore DENIES Axis-Shield's request as moot. (Docket No. 181)

Axis-Shield also requests that a case management conference be set up to schedule severe sanctions proceedings against General Atomics for submitting false declarations in support of its motion, producing false documents during discovery, and giving false testimony at deposition. *See* Oppo. at 1-2. Axis-Shield also asks that further discovery be scheduled, if warranted, to determine the "true composition" of General Atomics enzymatic assay kit. *See* Oppo. at 2:25-26. Should Axis-Shield wish to seek sanctions, it may do so. However, neither a special case management conference for this purpose, nor further discovery, is warranted at this point.